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Managing Interleukin-2

IL-2

Therapy

U.S. DEPARTMENT OF HEALTH
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Introduction

This booklet will give you information about *interleukin-2** (IL-2) therapy and its possible side effects. Throughout therapy, your nurses will work closely with you to help you deal with the side effects IL-2 may cause.

During your treatment, a group of health care professionals will take part in your care. This group includes physicians, nurses, dietitians, social workers, and other health care specialists. Feel free to ask them any questions you have about your treatment. They are all there to help you.

What is interleukin-2?

IL-2 is a protein made by the body. IL-2 stimulates white blood cells, called *lymphocytes,* to reproduce themselves and help the body fight infections and cancers. The IL-2 you will receive is a pale yellow liquid that comes in a small bottle.

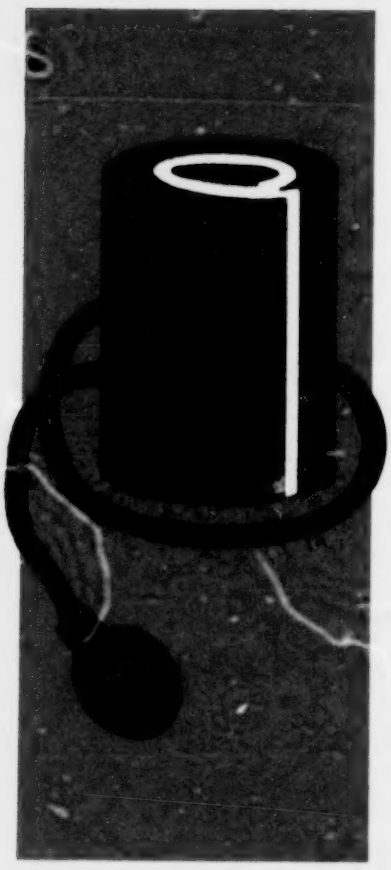
How will I receive interleukin-2?

You will receive IL-2 through an *intravenous* (IV) line. The IV line is a thin, flexible, plastic tube that runs from a bottle of medication into a tiny needle placed in a vein—usually in the arm. The patient receives one dose of IL-2 each day for 5 or 6 days. Each dose of IL-2 takes about 15 minutes. After receiving IL-2, you should stay in your room for an hour so that your nurse can watch how you react to the treatment.

**Italicized words in text are defined in the glossary at the back of the booklet.*

The IV line will remain in place throughout your hospital stay. In addition to IL-2, it will be used to give you a solution of water, sugar (glucose), and salt (sodium) throughout treatment to keep your body fluids in a proper balance. The IV may also be used to give you medicine to help manage side effects.

What will treatment involve?



Each day that you are in the hospital, blood samples will be taken for routine tests. While you receive IL-2, your nurses will watch your condition closely. Your vital signs (temperature, pulse, breathing rate, and blood pressure) will be checked regularly. You will be weighed daily. A record of how much fluid you receive and urinate will also be kept.

Each day that you receive IL-2, you also will be given three other medications:

- Acetaminophen (to prevent fever).
- Indomethacin (to decrease *inflammation*, which is characterized by redness, swelling, warmth, tenderness, or pain).
- Ranitidine (to lower the amount of acid in your stomach).

Will there be any side effects from treatment?

As you continue IL-2 therapy, you may begin to have side effects from the treatment. Side effects other patients have had include:

- Chills, low blood pressure, rapid heartbeat, swelling.
- Breathing difficulties.
- Mental and emotional changes.
- Itching, dry skin, rash.
- Decreased urination.
- Decreased appetite.
- Diarrhea.
- Nausea and vomiting.
- Dry or sore mouth.

Many patients have said that they felt as though they had a bad case of the flu, with fever, fatigue, muscle aches, and a general feeling of weakness.

You may experience some or all of these side effects, but in most cases they will be temporary and will go away after treatment ends. In rare cases, some side effects can be permanent and serious, even life-threatening. To help the nursing staff care for you, be sure to tell them whenever you feel any unusual changes.

Circulatory Side Effects

IL-2 can cause side effects that involve your heart and blood vessels. These side effects include chills, low blood pressure *(hypotension),* fast heart beat *(tachycardia),* and swelling *(edema).*

Chills

Some patients feel a chill 1 to 2 hours after receiving IL-2. If you begin to feel cold, tell your nurse right away. The nurse will give you warm blankets. If you develop a severe chill,

your nurse will give you medication through your IV to help the chill go away.

Low Blood Pressure

Low blood pressure may cause you to feel lightheaded or dizzy. If you feel this way, stay in bed and call the nurse to help you. The nurse will take your blood pressure and also may:

- Lower the head of your bed, which will help relieve these symptoms.
- Give you other fluids through the IV, as ordered by your doctor.

Medications also may be needed to raise your blood pressure.

Rapid Heartbeat

During IL-2 treatment, some patients have heartbeats faster than 120 beats per minute. If this occurs, your pulse will be checked often and your doctor will be notified. Your doctor may decide to stop IL-2 therapy if your heartbeat is too rapid.

Swelling

Most patients have some swelling of the hands, feet, and face. This swelling is caused by fluid leaking from the blood vessels into the body tissues. It usually begins by the second day of treatment. If you have swelling, you will probably gain weight from the extra fluid in your body. Because your hands may swell, it's a good idea to remove your rings before you begin therapy.

Swelling will go down a few days after treatment ends. To help reduce the swelling faster, you may be given a *diuretic* (also called

"water pills"). A diuretic is a medication that helps your kidneys remove extra fluid by increasing the amount you urinate.

Respiratory Side Effects

IL-2 may cause fluid to build up in your lungs, which can make it harder for you to breathe. If you have any difficulty breathing, call your nurse. You will be asked to stay in bed, and the head of your bed will be raised. When you need to get out of bed, ask your nurse for help. You may be given oxygen to help you breathe more easily. A sample of your blood also may be taken to check the amount of oxygen in your blood.

Psychological Side Effects

During IL-2 therapy, you may have some confusion and changes in your moods. These changes may begin on the third or fourth day of treatment. You may become moody, irritable, confused, agitated, forgetful, or sluggish. The severity of these side effects varies. The higher the dose of IL-2, the more likely it is that you will have these changes.

As treatment continues, you may have feelings of sadness, increasing irritability, difficulty sleeping *(insomnia)*, nightmares, clumsiness, and some confusion. Some patients see or hear things that are not there *(hallucinations)*. These side effects may increase as therapy continues. To protect you, your nurse may pull up the side rails on your bed and ask you to use the call button when you need to use the bathroom.

Fewer than half of IL-2 patients have mild confusion; only a small number have severe

changes. If you have any of these changes, it may help to turn on the radio or television or have a friend or family member stay with you. Although these side effects can be upsetting, the staff is skilled in helping patients cope with such changes and will do all that they can for you.

If these side effects become severe, your doctor may stop IL-2 therapy. The side effects will gradually end when treatment is over.

Skin Side Effects

Almost everyone who has IL-2 therapy will have some kind of dry skin or rash. The signs of dry skin are roughness, chapping, scaling, flaking, and redness. Dry skin may develop anywhere on your body. Applying creams, lotions, and oils can help you feel more comfortable.

The hospital will give you cream, lotion, oil, and moisturizing soap. *Begin to use them even before you start IL-2 therapy.*

The following tips may help you manage skin problems during IL-2 therapy:

- Don't use any perfumes, colognes, after-shave lotions, or soaps that contain alcohol.
- Apply the cream twice a day. This cream works best when it's put on after bathing, while your skin is still damp. The cream is very thick and may be hard to spread. Apply it to especially dry areas on your body.

- Apply the lotion twice a day. Put it on the parts of your body where you did not use the cream. Be careful not to get the cream or lotion in your eyes.
- Use one capful of the oil in your bath water or in your bedside basin.

In addition to these products, you also may be given medications to help with skin problems such as itching. They may be given by pill or injection.

When you leave the hospital, be sure to stay out of the sun as much as possible because your skin will be very sensitive to sunlight. If you go outside, use a sunscreen with a sun protection factor (SPF rating) of at least 15. Some patients have rashes and dryness for up to 6 weeks after therapy, so continue careful skin care until signs of dryness have gone away.

Urinary Side Effects

Because IL-2 causes fluid to leak into body tissues, you will not urinate as much as normal. You may notice that your urine becomes dark, cloudy, and has an unpleasant odor. The amount of fluid you drink and urinate will be recorded, and an intake/output sheet will be kept in your room for this purpose.

If you are unable to urinate, or if the amount you urinate decreases greatly, a *Foley catheter* may be inserted into your bladder. This catheter is a flexible plastic tube that drains the urine. The amount of urine can be measured to help determine how much fluid needs to be replaced through your IV line. The catheter

may remain in place until IL-2 therapy is completed.

When you have finished IL-2 therapy, you may be given a *diuretic* to help you lose excess fluid.

Nutritional Side Effects

Proper nutrition is very important to keep up your strength and maintain health. During IL-2 treatment, you may prefer certain foods and your taste for food may change. For example, you may develop a dislike or lose your taste for foods that you had enjoyed before. You also may lose your appetite for a while.

A dietitian can help plan meals and give advice about your diet. The dietitian and your nurse will work with you to ensure that you eat and drink enough during therapy. They will also talk with you about any other concerns you have about your diet.

If other side effects of therapy—such as nausea and vomiting, diarrhea, or a sore mouth—make it hard for you to eat, medications may be given to help you.

When IL-2 therapy is over, your appetite will return and you may follow your usual diet.

Gastrointestinal Side Effects

IL-2 may affect your digestive system. These side effects can be uncomfortable, and the nursing staff will give you medication to help control them.

Diarrhea

Many patients on IL-2 therapy get diarrhea. As soon as your bowel movements become softer than usual, tell your nurse so that you can get medications right away. Many medications are

used to control diarrhea, but they will not stop it completely. Tell your nurse whenever you have loose bowel movements. If your bowel movements become watery, your nurse will need to measure them in a container that fits into the toilet. If it is hard to get to the bathroom quickly, you can use a portable toilet (called a bedside commode chair) that will be placed at your bedside. *Do not try to walk to the bathroom if you are not feeling well.* Just ask for help by pressing the call button.

Special Advice for Patients Who Have a Colostomy or Ileostomy

If you have a *colostomy* or *ileostomy,* you may need to adjust your routine ostomy care. For example, if you do not wear a pouch, you should do so during treatment if you have diarrhea. If you irrigate your colostomy, you should stop while you have diarrhea. If diarrhea becomes watery, your nurse can connect the pouch to a drainage bag to avoid leakage if the pouch overfills.

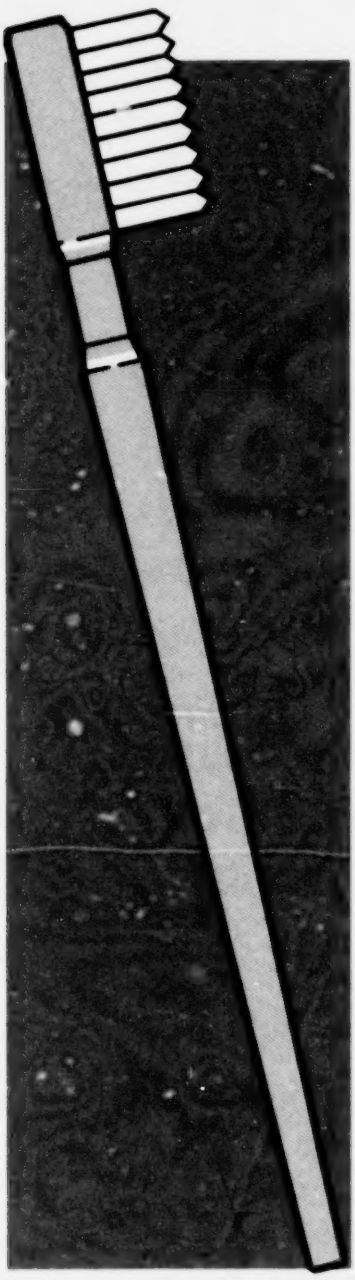
Diarrhea also may irritate the skin around the colostomy. You should use a skin protectant or skin barrier such as a skin preparation or Karya paste.

Nausea and Vomiting

Many patients have nausea or vomiting during IL-2 treatment. Tell your nurse whenever you feel nauseated so that you can get medication to help with this problem. If the medication does not help, let your nurse know. There are other medications that may work better for you. You might need to take antinausea medicines before meals to help prevent vomiting.

Mouth Irritation

A sore mouth *(stomatitis)* can be a side effect of IL-2 therapy. Signs and symptoms include dryness of the lips or mouth, a mild burning sensation, soreness, swelling, redness, less saliva, and a change in taste. Sometimes a fungus infection called *candidiasis,* or oral thrush, develops. This condition looks like soft, white patches on the tongue or on the sides of the mouth.



To prevent or reduce mouth sores, follow these guidelines:

Tooth Brushing Hints

- Rinse your toothbrush well after each use and store it in a dry place.
- Do not use a commercial toothpaste or mouthwash that contains alcohol.
- Rinse or brush your teeth within 30 minutes after each meal. The nursing staff may give you a special mouthrinse to use after brushing to help reduce soreness in your mouth.
- You may wish to use a soft toothbrush or sponge if your mouth and tongue are especially sensitive or sore.

Eating Hints

- Don't eat hot or spicy foods.
- Don't have foods and juices made from oranges, lemons, limes, grapefruit,

pineapples, and tomatoes. The acids in these fruits can irritate your mouth.

- Don't drink carbonated beverages.
- Stay away from hard, salty foods such as crackers, potato chips, and pretzels.

Your nurse also can give you a liquid *anesthetic* that will make your mouth numb and an artificial saliva spray to help the soreness.

Will I need to do anything special after IL-2 therapy?

To help you recover as quickly as possible after IL-2 therapy, follow these guidelines:

- Gradually increase the amount of food you eat. Eat high-protein foods such as meat, eggs, milk, and cheese.
- Drink about four to six glasses of fluid each day. To increase the amount of calories in your diet, drink high-calorie beverages such as instant breakfasts, milkshakes, and eggnogs.
- Gradually increase the amount you exercise, but take frequent rest breaks. Sleeping problems and unusual dreams may continue for 2 to 3 weeks.
- Use a strong sunblock—a product with a sun protection factor (SPF rating) of 15 or greater—on all exposed parts of your body when you are outside for more than a few minutes.
- Continue to use the creams, lotions, and oils you used in the hospital. The skin side

effects of IL-2 therapy may last for up to 6 weeks.

Tell your doctor or nurse right away if you have any of the following problems:

- Loss of appetite for more than 7 to 10 days.
- Diarrhea, nausea, or vomiting that does not go away.
- Difficulty breathing.
- Fever.
- Any new pain.

Glossary

anesthetic—a medication or other substance that causes insensitivity to pain.

candidiasis—a fungus infection that causes soft, white patches on the tongue or sides of the mouth (also called "oral thrush").

colostomy—a procedure in which an opening is made on the surface of the abdomen to eliminate body wastes directly from the colon, a section of the large intestine.

diuretic—(or "water pills") a drug that causes the body to discharge larger quantities of urine.

edema—swelling caused from the accumulation of water in the body tissues.

Foley catheter—a slender, flexible plastic tube inserted into some cavity of the body, in this case the bladder, to drain urine.

hallucinations—a false perception of reality, such as seeing or hearing things that do not exist.

hypotension—low blood pressure.

ileostomy—a procedure in which an opening is made to eliminate body wastes directly from the ileum, a section of the small intestine.

inflammation—occurs when a part of the body becomes red, swollen or hot, often accompanied by pain or tenderness, usually from irritation.

insomnia—chronic inability to sleep.

interleukin-2—a drug that helps the body fight cancer by increasing production of the body's own infection-fighting substances (lymphocytes).

intravenous (IV)—within a vein. A thin, flexible, plastic line that runs from a bottle of medication into a needle placed in a vein, usually in the arm. A method of giving liquids, including medications, directly into the bloodstream.

lymphocytes—certain white blood cells that help the body fight infections.

stomatitis—inflammation or irritation of the inside of the mouth.

tachycardia—excessively rapid heartbeat.

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